Polyethylene Glycol Solution

No other area of regulatory compliance receives more attention and scrutiny by regulatory authorities than the regulation of sterile products, for obvious reasons. With the increasing number of potent products, particularly the new line of small protein products, joining the long list of proven sterile products, the technology of manufacturing ster

Solutions of high molecular weight polymers are used widely in the heat treatment of metal alloys known as quenching. Water-soluble polymers offer a number of environmental, economic, and technical advantages, including eliminating the quench-oil fire hazard. The cooling power of water-soluble polymers such as polyethylene glycol (PEG) and salts aqueous solutions is studied with a cylindrical test probe of Inconel 600 by using a quenchometer. The dependences of the cooling rates, at each bath temperature, on polymer concentration and agitation are established. The present paper describes, through an understanding of the quenching mechanism, the effect that some parameters concerning the control of polymer quenchants have on their behavior. The effect of the salts on the quenching characteristics has also been studied. A study has been made of the relationship between the concentration of PEG, bath temperature, agitation, and cooling power in aqueous quenchants that contain up to 20 % of PEG. The presence of 5 % or less of the polymer in solution increased the cooling power of the quench in comparison with the water quenchant. However, increasing polymer concentration will decrease the cooling power as well as the maximum cooling rate because of the formation of the vapor blanket in the first phase of the quenching mechanism. The hardening power (HP) of the PEG quenchant solution was characterized on the cooling curve by the two critical points, CRF (the cooling rate at the ferrite/pearlite nose) and CRM (the cooling rate at the martensite start transformation), using an empirical relation giving HP in function of the measured polymer quenchant cooling characteristics. The highest HP was obtained in dilute solution of PEG having a concentration of 2.5 %, which reaches a value of 2051 at 20°C and 1951 at 45°C, under agitation.

Plant biotechnology has created unprecedented opportunities for the manipulation of biological systems of plants. To understand biotechnology, it is essential to know the basic aspects of genes and their organization in the genome of plant cells. This text on the subject is aimed at students.

Bioconjugate Techniques

Handbook of Pharmaceutical Manufacturing Formulations

Superlubricity

Casting Warpage Study

Characterization of Plasma-polymerized Polyethylene Glycol-like Films

Bioconjugate Techniques, 3rd Edition, is the essential guide to the modification and cross linking of biomolecules for use in research, diagnostics, and therapeutics. It provides highly detailed information on the chemistry, reagent systems, and practical applications for creating labeled or conjugate molecules. It also describes dozens of reactions, with details on hundreds of commercially available reagents and the use of these reagents for modifying or crosslinking peptides and proteins, sugars and polysaccharides, nucleic acids and oligonucleotides, lipids, and synthetic polymers. Offers a one-stop source for proven methods and protocols for synthesizing bioconjugates in the lab Provides step-by-step presentation makes the book an ideal source for researchers who are less familiar with the synthesis of bioconjugates Features full color illustrations Includes a more extensive introduction into the vast field of bioconjugation and one of the most thorough overviews of immobilization chemistry ever presented

Diffusion and equilibrium amounts of polyethylene glycol (PEG) in the cell walls (CWs) of red pine sapwood were studied as a function of molecular weight (MW) of PEG, wood moisture content, and solvent properties. Relative amounts of PEG in the CWs were determined by Raman microscopy, and by extraction of PEG-treated wood with toluene. The study confirmed penetration of high MW (PEG 20000) into the CWs by scanning transmission electron microscopy coupled with energy dispersive X-ray analyzer (STEM-EDXA) and time-of-flight secondary ion mass spectrometry (ToF-SIMS). A trend to higher concentrations of PEG in the middle lamellae was observed. ToF-SIMS was shown to be more appropriate for determining penetration of high MW PEG. Solvent properties, such as wood swelling ability and affinity for PEG were shown to be important factors determining PEG penetration into the CWs. Samples treated with PEG from chloroform solution adsorbed less PEG into the CWs than samples treated with PEG-water solution. These results were in agreement with the relative amounts of PEG measured by Raman microscope, which was shown to be a useful tool for quick and sample-preparation-free estimation of PEG in the CWs. Increase in ambient relative humidity caused movement of PEG from cell lumens to cell walls.Samples treated with lower MW PEG showed better CW impregnation, both when treated with nominal PEG MWs and with mixtures of PEG MWs. Preferential extraction of PEG from the cell lumens by toluene was shown to be an unacceptable approach for measuring PEG amounts in the CWs. Rates of diffusion of different PEG MWs into CWs were estimated by applying Fickian diffusion equations for plane and cylindrical surfaces. PEG Diffusion coefficients were in the order of 10-9 cm2/s for PEG MW 1000 and 10 -10 cm2/s for PEG 2000 and 4000 for both plane and cylindrical geometries. The high CW penetration rates suggested vacuum impregnation with PEG solutions as an efficient means of bulking wood.

Polyethylene Glycol as an Embedment for Microscopy and Histochemistry is the first book devoted to discussing polyethylene glycol (PEG) as a biological sample embedment for microscopy (EM and LM). Its contributors are international authorities in all areas of investigation using PEG as an embedding medium. The book provides broad coverage of a variety of methods, including low molecular PEG-cryosection, agarose block section-transferring technique, PEG section for scanning electron microscopy, nucleic acid in situ hybridization study, monoclonal antibody screening, PEG-celloidin mixture embedding method, and diethylene glycol distearate used as removable embedment. This practical volume will interest histologists, histochemists, cytochemists, cell biologists, and other researchers using PEG in microscopy.

The Stability of the Busulfan (BU) Intravenous Formulation and Its Stock Solution in Cosolvent Mixture of Dimethlacetamide and Polyethylene Glycol 400

Ethylene Glycols: Advances in Research and Application: 2011 Edition

Synthesis and Selected Application of Polyethylene Glycol (PEG) Derivatives

CRC Handbook of Phase Equilibria and Thermodynamic Data of Aqueous Polymer Solutions

Endoscopic Procedures in Colon and Rectum

Because of a need to reduce warpage in investment castings, and because of reported success in the use of aqueous polyalkylene glycol solutions for reducing warpage in heat-treated sheet-metal parts, particularly for aluminum alloys, an experiment was designed to include these solutions along with polyethylene glycol solutions in a study of quenching parameters. At the time of the study, the cost of polyethylene glycol was approximately one-third that of polyalkylene glycol. A total of 1032 cast parts was produced from 13 cast-furnace heats for study. Conclusions concerning warpage and mechanical properties were based on 2064 tensile specimens and the cast parts. Warpage was reduced significantly in the two glycol-solution systems. Solutions of 20 and 40 percent, by weight, appeared to be more effective for both polyethylene glycol and polyalkylene glycol. Minimum warpage occurred at a quenching temperature of 210°F (98.9°C). Warpage in the glycol quenching solutions was less than that which occurred in water at all temperatures studied. The average warpage of the parts was affected by their attitude during quenching. This warpage was caused by differential cooling rates on the forward and rear surfaces of the parts produced by the turbulence created by the downward motion of the basket during the quenching operation. Parts which displayed thin edges upon approach to the quenching solution showed less tendency to warp than did those which displayed broad surfaces.

The Effectiveness of Polyethylene Glycol as a Birch Veneer StabilizerA Study of the Methods of Assay for Phenobarbital in Polyethylene Glycol 400 SolutionConcentration of FMD Virus by Using Polyethylene Glycol and Starch SolutionThe Effect of Polyethylene Glycol 6000 and Other Chemical Pretreatment on Asparagus Seed GerminationPolyethylene Glycol as an Embedment for Microscopy and HistochemistryCRC Press

Ethylene Glycols: Advances in Research and Application: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Ethylene Glycols. The editors have built Ethylene Glycols: Advances in Research and Application: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Ethylene Glycols in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Ethylene Glycols: Advances in Research and Application: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

The Influence of Osmoconditioning of Sugar Beet (Beta Vulgaris L.) Seed in Polyethylene Glycol (PEG) and MgSO4 Solution at Four Germination Temperatures

Fabrication of Polyvinyl Alcohol (PVA) Blend Chitosan (CS) Membrane with Different Concentration of Polyethylene Glycol (PEG) 200 as Additives

An in Vitro Evaluation of Cocaine Hydrochloride Adsorption by Activated Charcoal and Desorption Upon the Addition of Polyethylene Glycol Electrolyte Lavage Solution

Polyethylene Glycol Modification of Lactase for Incorporation in Food Packaging Films

Stabilization of Hard Maple Flooring with Polyethylene Glycol 1000

Solvent systems are integral to drug development and pharmaceutical technology. This single topic encompasses numerous allied subjects running the gamut from recrystallization solvents to biorelevant media. The goal of this contribution to the AAPS Biotechnology: Pharmaceutical Aspects series is to generate both a practical handbook as well as a reference allowing the reader to make effective decisions concerning the use of solvents and solvent systems. To this end, the monograph was created by inviting recognized experts from a number of fields to author relevant sections. Specifically, 15 chapters have been designed covering the theoretical background of solubility, the effect of ionic equilibria and pH on solubilization, the use of solvents to effect drug substance crystallization and polymorph selection, the use of solvent systems in high throughput screening and early discovery, solvent use in preformulation, the use of solvents in bio-relevant dissolution and permeation experiments, solvents and their use as toxicology vehicles, solubilizing media and excipients in oral and parenteral formulation development, specialized vehicles for protein formulation and solvent systems for topical and pulmonary drug administration. The chapters are organized such that useful decision trees are included together with the scientific underpinning for their application. In addition, trends in the use of solvent systems and a balance of current views make this monograph useful to both the novice and experienced researcher and to scientists at all developmental stages from early discovery to late pharmaceutical operations.

Superlubricity is defined as a sliding regime in which friction or resistance to sliding vanishes. It has been shown that energy can be conserved by further reducing/removing friction in moving mechanical systems and this book includes contributions from world-renowned scientists who address some of the most fundamental research issues in overcoming friction. Superlubricity reviews the latest methods and materials in this area of research that are aimed at removing friction in nano-to-micro scale machines and large scale engineering components. Insight is also given into the atomic-scale origins of friction in general and superlubricity while other chapters focus on experimental and practical aspects or impacts of superlubricity that will be very useful for broader industrial community. * Reviews the latest fundamental research in superlubricity today * Presents 'state-of-the-art' methods, materials, and experimental techniques * Latest developments in tribomaterials, coatings, and lubricants providing superlubricity

Millions of Americans use e-cigarettes. Despite their popularity, little is known about their health effects. Some suggest that e-cigarettes likely confer lower risk compared to combustible tobacco cigarettes, because they do not expose users to toxicants produced through combustion. Proponents of e-cigarette use also tout the potential benefits of e-cigarettes as devices that could help combustible tobacco cigarette smokers to quit and thereby reduce tobacco-related

health risks. Others are concerned about the exposure to potentially toxic substances contained in e-cigarette emissions, especially in individuals who have never used tobacco products such as youth and young adults. Given their relatively recent introduction, there has been little time for a scientific body of evidence to develop on the health effects of e-cigarettes. Public Health Consequences of E-Cigarettes reviews and critically assesses the state of the emerging evidence about e-cigarettes and health. This report makes recommendations for the improvement of this research and highlights gaps that are a priority for future research.

The Effect of Polyethylene Glycol 6000 and Other Chemical Pretreatment on Asparagus Seed Germination

Chemistry and Biological Applications

New Technetium-99m Generator Technologies Utilizing Polyethylene Glycol-based Aqueous Biphasic Systems

Polyethylene Glycol Conditioning

Poly(ethylene Glycol)

This report shows the performance of flat sheet polyvinyl alcohol (PYA) blend chitosan (CS) membrane with different concentration polyethylene glycol (pEG) 200 as additives. The main objective of this research is to fabricate high solute separation and flux membrane. The membrane were prepared by dry phase inversion method from casting solution containing PV A and CS as polymer, formic acid (FA) as solvent and PEG 200 with concentration of 3 % and 5 % as additives. The membranes were characterized in terms of pure water permeation (PWP), solute separation (R), flux (J) and membrane morphology are observed using scanning electron microscopy (SEM) and atomic force microscopy (AFM). The results revealed that pure water permeation increases almost linearly when concentration of PEG 200 is increased from 3 % to 5 wt%. The solute separation and flux for both Bovine Serum Albumin (BSA) and lysozyme are also increased linearly when concentration of PEG 200 is increased from 3 % to 5 %. From the observation using SEM, as concentration of PEG 200 is increased in the casting solution, the number of pore sizes is increased. This contributes to high flux and pure water permeation. Then, when using AFM, it shows that the roughness parameter of membranes increased with increasing of PEG 200 as additive. This is due to the nodules is not merged and the number of pores increased. -Author.

This volume provides an interdisciplinary analysis of current biological applications of poly(ethylene glycol) (PEG). It includes a wide array of topics useful to materials scientists, organic chemists, biochemists, and bioengineers interested in drug delivery systems, pharmaceuticals and other biomaterials. The applications discussed include PEG-modified proteins, liposomes, drugs, surfaces of materials, and hydrogels. The volume also includes a review of PEG-oligonucleotides and a concise summary of the toxicology of PEG and its derivatives.

To publish a book on colonoscopy suitable for an international medical audience, drawing upon the expertise and talents of many outstanding world-wide clinicians, is a daunting task. New developments in videocolonoscope instruments, procedural technique, patient selection and preparation, and moderate sedation and monitoring are being made and reported daily in both the medical and the lay press. Just as over the last several decades colonoscopy has largely supplanted the use of barium enema x-ray study of the colon, new developments in gastrointestinal imaging such as computerized tomographic colonography and video transmitted capsule study of the colonic lumen and new discoveries in cellular and molecular biology that may facilitate the early detection of colon cancer, colon polyps and other gastrointestinal pathology threaten to relegate the role of screening colonoscopy to the side lines of medical practice. This book draws on the talents of renowned physicians who convey a sense of the history, the present state-of-the art and ongoing confronting issues, and the predicted future of this discipline.

Diffusion and Equilibrium Amount of Polyethylene Glycol in Wood Cell Walls

Capture and Utilization of Carbon Dioxide with Polyethylene Glycol

Introduction to Plant Tissue Culture

Cumulated Index Medicus

Colonoscopy

Endoscopic procedures in colon and rectum presents nine chapters which start with introductory ones like screening by colonoscopy as the preparation and monitoring for this exam. In addition to these approaches the book aims in the last four chapters to explain endoscopic diagnostic and therapeutic aspects in the colon and rectum. The description of each text is very comprehensive, instructive and easy to understand and presents the most current practices on the topics

described. This book is recommended for general and colorectal surgeons as it presents guidelines for diagnosis and treatment which are very well established.
Introduction and techniques; Introductory history; Laboratory organisation; Media; Aseptic manipulation; Basic aspects; Cell culture; Cellular totipotency; Somatic embryogenesis; Applications to plant breeding; Haploid prodution; Triploid production; In vitro pollination and fertilization; Zygotic embryo culture; Somatic hybridisation and cybridisation; Genetic transformation; Somaclonal and gametoclonal variant selection; Application to horticulture and forestry; Production of disease-free plants; clonal propagation; General applications; Industrial applications: secondary metabolite production; Germplasm conservation.
Miscible polymer pairs are formed with an energetic polymer, (poly(2- methyl-5-vinyl tetrazole), PMVT, and a nonenergetic polymer, polyethylene glycol, PEG, of molecular weight 1000 to 4000. This polymer blend PEG-PMVT is formed from acetonitrile solution upon removal of the solvent. The blend also precipitates when a nonsolvent, hexane, is added to a solution of PEG-PMVT in acetronitrile at or below 0 C. With PEG E1000, blends have been formed with PEG:PMVT of 1:1 to 1:1.8 by weight. This blend has been characterized from its unique glass transition temperature, Tg, as well as formation of transparent films. Interaction between chains in the form of weak C-H.O hydrogen bonding has been identified from infrared spectroscopy. Polymer blends are not formed with PMVT and polypropylene glycol, PPG, with methyl side chains as well as polyols with hydroxy number 3 or more. A blend is formed, however in a narrow regime of temperature with PMVT and glycidylazide polymer, GAP. This polymer blend is found to be a desensitizing energetic binder for propellants and for plastic-bonded explosives in particular. A PBX composition containing 91 percent RDX by weight and 9 percent PEG-PMVT polymer blend has a drop-weight-impact sensitivity better than Comp B. Polyethylene glycol (PEG), Desensitizing binder, Poly(2-methyl-5-vinyl tetrazole) (PMVT), Miscible polymer pairs, Interpenetrating network, Energetic binder, Sympathetic detonation polymer blend.
Polyethylene Glycol-Poly(2-Methyl-5-Vinyl Tetrazole) Polymer Blend (A Desensitizing Binder for Propellants and Explosives).
Public Health Consequences of E-Cigarettes
Biotechnical and Biomedical Applications
Polyethylene Glycol as an Ice Control Coating
Polyethylene Glycol as an Embedment for Microscopy and Histochemistry
Two new schemes for TcO4?/MoO42? separations from OH? and MoO42? media using polyethylene glycol (PEG)-based aqueous biphasic systems (ABS) have been developed. The tw
important salt solutions in current {sup 99m}Tc-generator technologies, OH? and MoO42?, also salt out PEG to form ABS. In liquid/liquid PEG- ABS, pertechnetate can be separated from
molybdate with separation factors as high as 10,000. Stripping is accomplished by reduction of the TcO4? and back extraction into a salt solution. the strip solution can be the salt of an in
agent (e.g., Na4HEDPA) and thus may, under the appropriate conditions, be injected directly into the human body. {sup 99m}TcO4? can also be concentrated from a dilute load solution
99MoO42? in NaOH using an aqueous biphasic extraction chromatographic technique (ABEC). A rinse with K2CO3 assures that all 99MoO42? is removed from the column and this is co
by a rapid drop in 99Mo activity by the fourth free column volume (fcv) of rinse. The {sup 99m}TcO4? is then eluted with water. This chromatographic separation affords 94% of the {sup
99m}TcO4? activity in 5 fcv, with the y spectrum showing less than 2 x 10?4 of the original 99Mo activity.
A large amount of experimental data has been published since the debut of the original CRC Handbook of Thermodynamic Data of Aqueous Polymer Solutions. Incorporating new and up
material, the CRC Handbook of Phase Equilibria and Thermodynamic Data of Aqueous Polymer Solutions provides a comprehensive collection of thermodynamic data of polymer solutio
helps readers quickly retrieve necessary information from the literature, and assists researchers in planning new measurements where data are missing. A valuable resource for the mode
chemistry field, the Handbook clearly details how measurements were conducted and methodically explains the nomenclature. It presents data essential for the production and use of pol
well as for understanding the physical behavior and intermolecular interactions in polymer solutions.
The idea for this book came from discussions among participants in a symposium on biotechnical applications at the "Pacifichem 89" meeting in Honolulu. It was the majority opinion of th
group that a volume dedicated to biotechnical and biomedical applications of PEG chemistry would enhance research and development in this area. Though the book was conceived at th
Honolulu meeting, it is not a proceedings of this symposium. Several groups who did not participate in this meeting are repre sented in the book, and the book incorporates much work do
the meeting. The book does not include contributions in all related areas to which PEG chemistry has been applied. Several invited researchers declined to parti.:ipate, and there is not en
space in this single volume to properly cover all submissions. Chapter I-an overview of the topic-discusses in brief applications not given detailed coverage in specifically devoted chapter
following topics are covered: introduction to and fundamental properties of PEG and derivatives in Chapters 1-3; separations using aqueous polymer two-phase partitioning in Chapters 4
PEG-proteins as catalysts in biotechnical applications in Chapters 7 and 8; biomedical applications of PEG-proteins in Chapters 9-13; PEG modified surfaces for a variety of biomedical a
biotechnical applications in Chapters 14-20; and synthesis of new PEG derivatives in Chapters 21 and 22.
Introduction to Plant Biotechnology
AMA Drug Evaluations
A Study of the Methods of Assay for Phenobarbital in Polyethylene Glycol 400 Solution

Measurement of the Cooling Power of Polyethylene Glycol Aqueous Solutions Used as Quenching Media

A parallel-plate capacitively-coupled plasma deposition system was designed and built for the growth of polyethylene glycol-like films. Deposition rate, bonding structure and dissolution and swelling behavior was characterized as a function of input RF power, reactor pressure and substrate temperature to provide information on the relationship between input plasma parameters and film properties. For the conditions studied in this thesis, deposition rates increased at increasing input powers and operating pressures and decreasing substrate temperatures. The PEG-like coatings resembled higher molecular weight solution-polymerized PEG films with a higher crosslinked structure. Manipulation of plasma deposition conditions allowed control of film crosslink density and resulted in tunable dissolution and swelling properties of the PEG-like polymer. At higher applied powers, lower operating pressures, and higher substrate temperatures, films had a higher crosslink density, thus leading to slower dissolution rates and smaller extents of swelling. Void space openings of swelled-state, PEG-like films were determined using electrophoretic drift and diffusion-controlled transport of fluorophore-tagged PAMAM dendrimers into the bulk of the coating. PAMAM dendrimers were used because of their well-defined sizes and negatively-charged succinamic acid surface groups as a means to probe pore sizes of the plasma films. It was estimated that the upper bound of pore size diameters in the plasma polymer was approximately equal to ~5.5-6.0 nm. Positron annihilation lifetime spectroscopy was used to determine average pore sizes and was estimated to equal ~0.60-0.65 nm.

In this volume, Professor He and his coworkers summarize polyethylene glycol (PEG)-promoted CO2 chemistry on the basis of understanding about phase behavior of PEG/CO2 system and reaction mechanism at molecular level. As PEG could be utilized as a green replacement for organic solvents, phase-transfer catalyst, surfactant, support in various reaction systems, significantly promoting catalytic activity and recovering expensive metal catalysts, particularly regarded as a CO2-philic material, the authors focus on special applications of PEG in CO2 capture and utilization, including PEG-functionalized catalysts for efficient transformation of CO2 and PEG-functionalized absorbents for efficient CO2 capture. Furthermore, they describe carbon capture and utilization strategy as an alternative approach to address the energy penalty problem in carbon capture and storage. Interestingly, the authors also discuss PEG radical chemistry in dense CO2 as rather creative and unusual use of PEG, presumably serves as a reaction medium and a radical initiator for radical chemistry.

Sterile Products

Measurement of Protein-protein Interactions Applied to Protein Crystallization in Salt and Polyethylene Glycol Solutions

Concentration of FMD Virus by Using Polyethylene Glycol and Starch Solution

An Effective Strategy to Protect Against Liver Ischemia Reperfusion Injury

Solvent Systems and Their Selection in Pharmaceutics and Biopharmaceutics